

REFRESHING SYSTEM SOFTWARE

As we mentioned at the beginning of the chapter, it is possible for the System Software on the Q Drive to become corrupted or otherwise non-functional. If this happens, the rest of your drive, and the programs and data on it, is probably still OK. You just need fresh System Software. To make it easier to refresh your System Software, we include a "spare" copy right on the Q Drive. If your Q Drive ever fails to boot, or boots part-way and then crashes, and you can't find any other cause, try this procedure.

1 BOOT THE SYSTEM DISK

Hold down the Option key while turning on the computer. Press 1 to enter the Control Panel, select Slots, and change the Startup Slot to 5. Press Return to save your changes on the Slots screen. Put the Q Drive IGS System Disk in your first 3.5" drive. Press Escape, then Return, to exit the Control Panel. The System Disk will begin booting. Await the Finder.

2 MAKE SURE THE SPARE COPY IS STILL THERE

Pull down the Finder's Special menu and choose "Preferences." Make sure the "Show hidden files" checkbox is turned on. Then click the OK button.

Double-click the Q1 icon. Scroll through the window and verify that the file "Spare.SEA" is there. (This file is normally invisible to the Finder.) If this file is not present, *do not proceed with the rest of these instructions.*

3 DELETE EXISTING SYSTEM SOFTWARE

To return to a clean slate, we'll erase *all* the System Software that's already on the Q Drive. (This includes any additional fonts, desk accessories, and control panels you may have installed, so make sure you have backup copies of these items.) Drag these files or folders from the Q1 window to the Trash: System, System5, System6, Basic.System, Basic.System5, Basic.System6, Basic.Launcher, Basic.Launcher5, Icons, Icons5, and Icons6. (Your Q Drive may not have all these files. Just trash the ones you have.) Then select "Empty Trash" from the Special menu.

4 RESTORE THE SYSTEM SOFTWARE

Double-click the "Spare.SEA" file. This is a GS ShrinkIt self-extracting archive (SEA). When you are asked to specify the destination, simply press Return to tell the computer to begin extracting into Q1.

If, during the extraction process, the computer tells you about a duplicate or existing file and asks you what to do, click "Overwrite."

When the archive has finished extracting, you'll be returned to the Finder. Change the Control Panel startup slot back to its normal value and restart.

BY THE WAY

If you're comfortable with the Q Drive (and have unpacked the System 6 disks from the Disks archive) and don't feel the need to keep the Spare system software on hand, you can delete the Spare.SEA file. Just instruct the Finder to display hidden files (as in Step 2 above), then drag the Spare.SEA file to the trash. You'll free up about two megabytes of storage.

PRODOS ERROR CODES

ProDOS error codes are given in hexadecimal and decimal notation. Hexadecimal notation is usually preceded by a dollar sign.

HEX	DEC.	ERROR
\$27	39	I/O Error—Bad disk media or no disk in drive
\$28	40	No disk drive connected to specified slot and drive
\$2B	43	Disk is write-protected—can't save onto it
\$40	64	Invalid pathname—too long, or illegal characters
\$44	68	One or more of the subdirectories in the pathname does not exist
\$45	69	The volume specified in the pathname is not online
\$46	70	The file specified by the pathname does not exist
\$47	71	A file with that name already exists in the directory
\$48	72	The disk is full
\$49	73	The volume directory is full (already contains 51 files)
\$4B	75	This file is a GS/OS file or is damaged
\$4E	78	File locked—cannot be deleted, renamed, or written
\$51	81	Invalid file count in directory—disk may be damaged
\$52	82	The disk is not a ProDOS disk or may be damaged
\$57	87	Two volumes with the same name are online
\$5A	90	Volume bitmap damaged

APPENDIX A

PRODOS & GS/OS ERROR CODES

APPLESOFT ERROR CODES

You may encounter some of the following error codes when running Applesoft BASIC programs.

CODE	ERROR
3	No device connected (see ProDOS error 40)
4	Disk write-protected (see ProDOS error 43)
6	Path not found (see ProDOS error 68, 69, or 70)
8	I/O Error (see ProDOS error 39, 75, 81, 82, or 90)
9	Disk Full (see ProDOS error 72 or 73)
10	File locked (see ProDOS error 78)
19	Duplicate filename (see ProDOS error 71)
21	Files still open at program end (type CLOSE and hit Return)

ILGS ERROR CODES

GS/OS and the ILGS Toolbox use many of the same error codes as ProDOS, except that they are usually displayed with two leading zeroes, in the format \$00xx (for example, \$0027 for I/O Error). Additional error codes you may see while using ILGS-specific programs include:

CODE	ERROR
\$0201	Not enough free memory
\$0308	Heartbeat queue damaged (Possible cause: ProDOS 8 startup program conflict with GS/OS thermometer.)
\$0911	Can't synchronize with system (Possible cause: heat-related keyboard controller error, usually indicates you need a cooling fan)

Other error codes are possible, and denote specific ILGS toolbox or GS/OS errors which won't mean much to you as a user, but usually indicate that the program you are using is not handling errors gracefully or is performing operations that are incompatible with the current operating system. Contact the publisher of the software in which you encountered the error for more information.

Your Q Drive comes with about fifteen megabytes of public domain and shareware programs. *Public domain* software is software to which the programmer has given up all duplication rights; it belongs to everyone and can be distributed freely. *Freeware*, a similar category, gives the author slightly more control: the software can be given away, but the author still owns the copyright and can stipulate conditions on its distribution. Shareware is software that can be distributed freely, but must be paid for if you find it useful. *If you do find a shareware program useful, pay for it, and support the programmer.* Some demos of commercial programs are also included; most of these are limited in some way to allow you to get a feel for the way the program works without actually allowing you to do much useful work. All this software is provided as-is. We cannot provide technical support for any of it, nor can we guarantee its quality.

While we feel the programs are worthwhile (and, in fact, we added them to the drive at the request of our customers), you may disagree. In that case, the files easily be deleted using any disk utility program, such as the Finder, Copy II Plus, or the Apple System Utilities.

Some of the free programs have no documentation at all. Other programs provide instructions inside the program itself. Some programs have documentation in a disk file. A few even provide a program which will print a "manual" on your printer. A couple have instructions in French!

APPENDIX B

THE FREE SOFTWARE

Some files (such as the pictures, songs, and sounds) must be loaded into appropriate programs in order to use them. Use *SHRConvert* or your favorite paint program to display super-hi-res pictures; use *View.Sys16* to view 3200-color pictures. Use *AudioZap* or *Sound Shop* to play back sampled sounds. Use *SoundSmith* to load and play music files. All these programs are included.

We also included programs in archive form. These programs won't work on a hard drive and must be run from a 3.5" disk. Double-click the *Disks.SHK* archive file to open the archive with *GS ShrinkIt!*, then choose the disks you want to unpack and click *Extract*. Once you've unpacked the disks, you can delete the archive.

We hope you enjoy the software. If you know of any really good programs that we overlooked, let us know!

Switch Hitter allows you to install both Apple IIgs System 6 and System 5 on the same hard drive, and to switch between them with a few simple keystrokes. (It also allows you to adjust your IIgs's Startup Slot and System Speed and to start up programs loaded in your 3.5" or 5.25" drives from the same screen.)

If you bought one of our Q Drives for your IIgs, it came with Switch Hitter (and System 5 and System 6) already installed, so you can begin using it immediately. We also included the Switch Hitter disk in the Disks.SHK archive file. We suggest you unpack this disk to an actual 3.5" floppy disk so you'll have a backup, just in case you need to re-install later. (Instructions for this operation can be found at the end of Chapter 2.)

After the Q Drive's initial configuration, it is set up to boot into System 5, because not everyone has enough memory to run System 6. If you want the Q Drive to boot into System 6 and have at least 2 megabytes of RAM, hold down the Control key while turning on your computer until the Switch Hitter screen appears. Then press the 6 key, wait a few seconds until Switch Hitter has made the changeover to System 6, and press R to restart.

You only need to do this when you want to switch System Software versions, not each time you start up the computer.

APPENDIX C

USING SWITCH HITTER

USING SWITCH HITTER

Switch Hitter can be activated in two ways. First, you can start up your system as usual and double-click the Switch.Hitter icon on your hard drive. Or second, you can hold down the Control key when turning on the computer, or continue holding down the Control key after pressing ⌘-Control-Reset. This second method has the advantage of being much faster than waiting for the entire System Software to load if you want to switch to the other System version (or perform some other function) at boot time.

Once Switch Hitter is activated, a screen appears that shows you the current System version, the current IIgs speed, and the current Startup Slot. To change the System Software version, press the **5** or **6** key. In a few seconds, Switch Hitter's screen will change to indicate that your hard drive will now start up into the System Software you specified.

You can also adjust the IIgs's System Speed to Fast or Normal by pressing the **F** or **N** keys. This is a temporary adjustment and is not made permanent in the IIgs Control Panel; when you enter the Control Panel or restart the computer, the speed will be set back to the Control Panel setting. This setting is most useful in conjunction with the Shift-5 and Shift-6 options; usually you won't want to slow your IIgs down.

Adjust the IIGS's Startup Slot with the **left and right arrow** keys. Changing the Startup Slot here is the same as changing it in the Control Panel and is a permanent change (as opposed to using Shift-5 or Shift 6 as below).

Press the **P** key to start up the computer into ProDOS 8, completely bypassing the usual IIGS System Software. ProDOS will load and execute the first file it finds on your hard drive whose name ends with the word "System." In most cases this will be BASIC.System (the Applesoft BASIC application), but you can change this by copying the BASIC.System program to another disk, deleting it from your hard drive, copying the program you want to start up into to your hard drive, and finally copying BASIC.System back. If you have a utility that allows you to sort (reorganize) directories, you can, alternately, use that utility to put the program you want to start up into before BASIC.System in the directory.

Press the **B** key to start up Applesoft BASIC by running BASIC.System. This will always get you into BASIC, even if you've placed some other application first in the directory.

Press the **Q** key to Quit Switch Hitter. If you started Switch Hitter from the Finder, the Q key will take you back to the Finder. If you started Switch Hitter by holding down Control while starting up your system, pressing Q will present the built-in ProDOS selector that allows you to run any 8-bit SYS-type program (like AppleWorks) but not any IIGS-specific programs.

Use the Quit option at boot time when you want to bypass GS/OS entirely and run only ProDOS 8. Note: The Quit option usually will not work properly if you launch Switch Hitter from the Finder and then change to a different version of the System Software, because Switch Hitter has hidden the System Software you started up from and the Finder can no longer be found by the system. Use Restart instead of Quit in these circumstances.

Press **Shift-5 or Shift-6** to restart your system from the 3.5" drive (Shift-5) or 5.25" drive (Shift-6) (assuming Slot 5 and Slot 6 in your IIGS Control Panel are set to SmartPort and Disk Port). Use these options when you want to bypass starting up your hard drive and boot a program directly in one of your disk drives. Combined with the speed control, these options allow you to run even old Apple IIe games (that expect to run at Normal, not Fast speed) without a side trip to the Control Panel. These options do not permanently change the Control Panel startup slot.

Press **R** to restart the IIGS. Usually, after changing to a different version of the System Software, you'll want to restart the system immediately to start up into the System Software you've chosen. This is a shortcut for ⌘-Control-Reset.

HOW IT WORKS

Switch Hitter works by maintaining two separate copies of the System Software on your hard drive. The System Software contains the following files located in your hard drive's main directory:

System 5

ProDOS
BASIC.System
System folder
Icons folder
BASIC.Launcher
AppleTalk folder (optional)

System 6

ProDOS
BASIC.System
System folder
Icons folder

The ProDOS files for System 5 and System 6 are identical, but the other files are completely different. (Switch Hitter installs itself into the ProDOS file, since it's the first thing that's loaded by the computer.) Since the names of the files are the same for both System 5 and System 6 but the actual contents of the files are different, Switch Hitter renames the files you're not using so that the system ignores them.

For example, when you're using System 6, the System 5 files are named BASIC.System5, System5, Icons5, BASIC.Launcher5, and AppleTalk5. When you're using System 5, the System 6 files are renamed BASIC.System6, System6, and Icons6. The IIGS always uses the files named System, Icons, and so forth, and it ignores the ones with the numbers at the end. When you switch system versions, Switch Hitter just renames all the files involved so that the System Software you've selected has the names the IIGS expects to find and so that the files you're not using are "out of the way," so to speak.

LIFE WITH TWO SYSTEM FOLDERS

Since the two System folders are completely separate, you must maintain two separate copies of all your Desk Accessories, CDEVs, and so on. There are two Desk.Accs folders, one for System 5 and the other for System 6, and there are two CDEVs folders, etc. If you want access to a Desk Accessory from both System versions, you must place a copy of it in both Desk.Accs folders. Additionally, the two System versions have two separate clipboards, and any programs which store configuration data in the System folder will also have two separate configurations depending on the System Software. There are also two Icons folders.

It's almost like having two separate hard drives connected to the computer and physically unplugging one and plugging in the other to switch systems, except, of course, that only the System Software is affected by the switch. The rest of your programs stay the same.

In most cases the inevitable redundancy of having two copies of all your Desk Accessories and so forth won't be more than a minor headache. It is possible to eliminate some of this, particularly with Desk Accessories, via a System 6 Finder Extension called IR. IR allows you to add DAs to the ⌘ menu by double-clicking them. Thus, you can keep most of your DAs in the System 5 Desk.Accs folder, then add them to your ⌘ menu in System 6 by double-clicking them from the Finder.

If you use ProSel-16 or another such program launcher, you can install it under System 5, then switch to System 6 and install it again to make it available under both systems. In the case of ProSel-16, your menu screens will automatically be shared between the two versions; in other program launchers, you may need to build your menus separately in both systems. Be sure to use Switch Hitter to verify the current System version before installing any system updates, Desk Accessories, program selectors, and so forth. This way you'll know exactly which of your two Systems you're updating. Don't re-install System 6 on top of System 5 or vice versa.

Under certain circumstances, installing System Software updates (for example, a new version of System 6 if released) will cause the IIGS to forget how to automatically run Switch Hitter when you hold down the Control key during a boot. (If the update replaces the ProDOS file, this will happen.) If this happens, just run the Switch Hitter installer (INSTALL.SYSTEM) and type in the name of your hard drive. The installer will notice that Switch Hitter is already installed and ask you if you want to re-install. Type "Y" for Yes and the situation will be rectified.

REMOVING SWITCH HITTER & UNNEEDED SYSTEM SOFTWARE

At some point in the future you may decide to simply stick with one System version and Switch Hitter will become unnecessary. If this happens, run Switch Hitter as usual and make sure you've selected the System Software you want to keep. Then run the Switch Hitter installer (INSTALL.SYSTEM) and type in the name of your hard drive once again. The installer will notice that Switch Hitter is already installed and ask you if you want to re-install. Type "N" for No at this question. Then the installer will ask you if you want to remove Switch Hitter. Answer "Y" and Switch Hitter will be removed. Restart your system after that and remove the System Software you're not using (instructions below).

First, make sure you've moved anything you want to keep (Desk Accessories, scrapbook files, utilities, etc.) out of the System folder you're not using.

If you are keeping System 6, drag the following files and folders to the Trash: BASIC.System5, BASIC.Launcher5, System5, Icons5, and AppleTalk5 (if that folder exists—it may not on your system).

If you are keeping System 5, drag the following files and folders to the Trash: BASIC.System6, System6, and Icons6.

Finally, select "Empty Trash" and the System Software you're not using will be gone forever.

SWITCH HITTER INSTALLATION

While Switch Hitter is already installed on your Q Drive, you may have a need to re-install it later (for example, if you re-partition the drive or install a System Software update). Most Q Drive owners won't need to re-install Switch Hitter, but for those few of you, here's the scoop.

There are two phases to installation. First, the Switch Hitter installer moves the existing System Software out of the way and you use Apple's

installation procedures to install the other System Software, ending up with both versions of the System Software on your hard drive. Second, again using the Switch Hitter installer, you install Switch Hitter itself on your hard drive.

To begin installation of Switch Hitter, start up the INSTALL.SYSTEM program. You can do this by double-clicking the INSTALL.SYSTEM icon from the Finder or, if you have a bootable Switch Hitter disk, by starting up from the Switch Hitter disk.

In a moment the installer will ask you for the name of the hard drive volume on which you want to install Switch Hitter. Enter Q1 and press Return. The installer will then inspect your hard drive to figure out which System Software is currently installed on it (System 5 or System 6). Note: Before you install Switch Hitter you must have either System 5 or System 6 on your hard drive.

The installer will then tell you what version of the System Software it has found on your hard drive and ask you if you would like to move it "out of the way" so that you can install the other version of the System Software. Usually, installing new System Software removes any older System Software from your hard drive, but once the installer has moved it out of the way, you can install new System Software without removing the old version. Answer "Yes."

Note: Once you've moved the current System Software out of the way, you won't be able to start up from your hard drive until you install new System Software. The original System Software is "hidden" and the computer can no longer find it, not even to start up from it. Therefore, the very next thing you should do is install the other version of the System Software on your hard drive.

So follow the instructions for installing whichever System Software was not originally on your hard drive. We won't repeat those instructions here since you should already have a copy of them elsewhere. If your hard drive originally had System 6, install System 5; if your hard drive originally had System 5, install System 6. When you're completed, you will have both versions of the System Software on one drive!

Now get into the Switch Hitter installer again and tell it which hard drive volume you want to install Switch Hitter on (the same volume as last time). This time the installer will notice that you have both versions of the System Software installed and offer to install Switch Hitter. Tell it "Yes" to go ahead and install Switch Hitter. In a few moments, installation will be complete. Now you're ready to use Switch Hitter!

Complete Pathname: A pathname which begins with a slash and tells ProDOS all the directories which must be searched to get to the desired file. For example, /Q1/AWFILES/MYFILE is a complete pathname. See also *Partial Pathname*.

Defragmenter: See *Optimizer*.

Density: Refers to how much data is stored within a given space. Since hard drives pack more data into a smaller space, they are said to have a higher data density than floppies.

Desktop: The standard IIGS and Macintosh user interface, found in most IIGS-specific programs and many 8-bit programs. The desktop metaphor is used by the Finder and most other IIGS-specific programs. Usually, you interact with the computer by manipulating icons representing objects, files, and tools, and by selecting actions through pull-down menus. See also *Finder* and *WIMP*.

DIP Switches: Four or eight tiny switches jammed into a package the same size as a computer chip, usually found on interface cards and used for configuring the card. (From *Dual Inline Package*.)

Direct Memory Access: A technique which allows a hard drive interface to bypass the computer's main processor for maximum performance. Both the Apple II High Speed SCSI Card and the RamFAST/SCSI Card use DMA. Some peripherals are not DMA-compatible, so both cards have switches to defeat DMA in systems which do not support it. DMA interfacing allows approximately twice the raw data transfer rate of non-DMA SCSI interfacing.

Directory: A generic term which can refer to either a subdirectory (folder) or a volume directory. ProDOS uses directories to keep track of where your files are stored, what their names are, the last time they were changed, and so forth.

Disk Name: See *Volume Name*.

DMA: See *Direct Memory Access*.

Enhanced Apple IIe: A IIe manufactured during or after 1985, or an older IIe which has been upgraded with an enhancement kit. An enhanced IIe has a few minor technological advances which allow it to run slightly faster and to run new programs which take advantage of enhanced IIe features. If your Apple IIe displays "Apple IIe" at the top of the screen when you turn it on, it's enhanced. If it just says "Apple II", it's not enhanced.

Error Codes: Obscure numbers which some programs display in place of English error messages. If the programmer is having an especially bad day, error codes will be displayed in hexadecimal.

File: A collection of related data stored on a disk under a file name. Files can contain programs (SYS, S16, BAS files), data (AppleWorks and text files), other files (subdirectories), and almost anything else.